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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/733,443
Filing Date: December 10, 2003
Appellant(s): MERICAS, ALEXANDER E.

Mark D. Simpson
For Appellant

EXAMINER'S ANSWER

This is in response to the Appeal Brief filed January 20, 2006, appealing from the Office action mailed August 10, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the Examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

Pending Appeal in Application No. 09/931,308.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The Appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The After Final amendment filed on September 16, 2005, has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The Appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,557,548	GOVER et al.	9-1996
2002/0026524	DHARAP	2-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,557,548 to Gover et al. in view of U.S. Patent Application Publication No. 2002/0026524 to Dharap.

Gover discloses a performance monitor for monitoring the occurrence of incidences of one or more events related to the operation of a processor (column 2, lines 1-7), comprising at least one monitor mode control register/control element (column 3, lines 6-12) and a plurality of performance monitor counters (column 3, lines 6-12) operatively connected to said monitor mode control register/control element (column 3, lines 18-20 and Figure 2), said monitor mode control

register/control element grouping said performance monitor counters (column 3, lines 18-28) so that when one of said performance monitor counters reaches capacity in connection with the counting incidences of a first of said events, a second of said performance monitor counters begins counting subsequent incidences of said first of said events (column 3, lines 40-63).

Gover discloses that the number of events equals X, the number of performance monitor counters equals Y, and said at least one monitor mode control register groups said performance monitor counters into groups of Z, wherein Y / X = Z (i.e. when four events are to be monitored and four counters are present, the counters are in groups of one (column 4, lines 57-60 and Figure 4) and when one large event is to be monitored and four counters are present, the counters are in a group of four (column 4, lines 60-64 and Figure 4).

Gover also discloses that when the number of events (i.e. X) is less than the number of performance monitor counters (i.e. Y), distributing the number of available counting elements across the number of events to be counted to employ serial counting (column 2, lines 11-25 and column 4, lines 55-67).

As noted above, the invention of Gover teaches many of the features of the claimed invention including that when the number of events (i.e. X) is less than the number of performance monitor counters (i.e. Y), distributing the number of available counting elements across the number of events to be counted to employ serial counting. While it would have been obvious to one having ordinary skill in the art to perform a conventional division operation in order to distribute the number of

performance monitor counters, Gover does not explicitly disclose such a division step.

Dharap teaches a data list transmutation and input mapping system including means for distributing a number of table entries (i.e. Y) across the number of available entries (i.e. X), when X < Y, by dividing the number of table entries (i.e. Y) by the number of available entries (i.e. X), and assigning a number of table entries, said number equal to the integer resulting from dividing Y by X, to each of the number of available entries and, assigning any unassigned table entries to at least one of said available entries (0025-0026).

It would have been obvious to one having ordinary skill in the art to modify the invention of Gover to explicitly disclose a division step, as taught by Dharap, because Dharap suggests a method pertinent to the particular problem of distributing items that would have provided means for correctly, accurately, and evenly assigning the counters to events of Gover (0025-0026).

(10) Response to Argument

Appellant first argues that the Examiner has not met the two-part Deminski Test which:

> [R]equires that (1) a determination be made as to whether the reference is within the field of the inventor's endeavor, and (2), assuming the reference is outside that field, a determination be made as to whether the reference is reasonably pertinent to the particular problem with which the inventor was involved. In the present circumstances, neither test is met; thus, the references are not analogous art that can be combined to determine patentability of the claims...Clearly, Dharap is not within the field of the inventor's endeavor herein. The subject invention is directed to performance monitors within a data processing system. Recognizing that interrupts could not be used during initial

hardware testing of a processor in the data processing system, or when the processor was executing time-sensitive code, the inventor herein developed a novel performance monitor which increases the available width of PMCs during the initial hardware testing of the processor or when the processor is executing time-sensitive code that cannot be interrupted.

Dharap has nothing to do with processor design, performance monitors, or extending the width of PMCs in a processor. The endeavor of Dharap is to enable the display of data on a small screen in a manner that is easy for a user of the small screen to use. This is clearly outside the field of endeavor of the inventor of the present invention. (page 7, line 9 to page 8, line 7)

The Examiner agrees that the invention of Dharap is reasonably outside the field of the inventor's endeavor and therefore a determination must be made as to whether the reference is reasonably pertinent to the particular problem with which the inventor was concerned.

Appellant then argues:

Since Dharap lies outside the field of the applicants' endeavor, the issue becomes whether the reference is reasonably pertinent to the particular problem with which the inventor was concerned. As noted above, the claimed invention is aimed at solving problems associated with the fact that interrupts could not be used during initial hardware testing of a processor in a data processing system, or when the processor was executing time-sensitive code. The applicant identified this problem and solved it by utilizing the present claimed structure.

A reference related to [a] displaying data on the small screen of a cellular telephone has no reasonable pertinence to solving the problem of an inability to use interrupts in certain situations involving hardware testing of a processor or the execution of time-sensitive code, problems that are solved by the present invention. One skilled in the art would not look to cellular telephone displays to solve such problems,

Furthermore, there is no reasonable basis for one skilled in the art attempting to solve an "interrupt problem" to turn to display screens of small hand-held devices in an attempt to solve such a problem. Display screens have nothing to do with interrupts; they merely display data that is useful to a user of the display screen.

Therefore, since Dharap is not reasonably pertinent to the interrupt problem, it is not analogous art according to the pertinent case law and MPEP 2141.01(a).

> Accordingly, the Dharap reference should be removed form [sic] consideration herein and the claims allowed. (page 8, line 11 to page 9, line 8)

The Examiner first asserts that the invention as claimed does not include any "interrupt problem" to be solved. Instead, the claimed invention only includes limitations for solving a problem of dividing a number of counting elements with respect to the number of events to be counted. For example, claim 1 requires:

> said at least one monitor mode control register grouping said performance monitor counters so that when one of said performance monitor counters reaches capacity in connection with the counting incidences of a first of said one or more events...wherein the number of events equals X, and the number of performance monitor counters equals Y, whereby said at least one monitor mode control register groups said performance monitor counters into Z groups, wherein Y/X=Z; and wherein when X<Y, said at least one monitor mode control register assigns a number of performance monitor counters, said number of performance monitor counters equal to an integer resulting from dividing Y by X, to each of said events to be counted; and wherein said at least one monitor control register assigns any unassigned performance monitor counters to at least one of said events.

This claim limitation does not refer to interrupts, but is instead a method for solving a problem of assignment by performing division. This particular problem is the same as the problem described on page 8, lines 9-16 of the instant specification, which states:

> Figure 3 is a flowchart illustrating an example of steps performed to allocate PMC's in accordance with a first embodiment of the invention in which the PMC's are divided evenly among the events being monitored. When the number of PMC's and number of events being monitored cannot be divided evenly, one or more of the PMC's will have less than others. Referring to Figure 3, at step 302, the number of events being monitored is determined. At step 304, the number of PMC'S available for monitoring is determined, and at step 306, the number of PMC's available is divided by the number of events to determine the grouping of the PMC's (step 308). (page 8, lines 9-16)

Therefore, the particular problem in which the Appellant is concerned, with respect to the claimed limitations, is not an "interrupt problem" but is instead the problem of performing division and/or item distribution.

The invention of Dharap is also concerned with the problem of division/item distribution and teaches that:

> Depending on the maximum number of available entries required on the list (nine in the case of an Internet-enabled cellular phone), the list may be granularized by dividing the total number of table entries by the number of available entries, and an abbreviated list 104 arranged for display as a WAP page on a cellular phone.
>
> In list 104, because only eight slots are available (one slot, entry 1, is used for a command to "show the list"), twenty-six divides by eight three times with a remainder of two, meaning that at most entries (six), three table letters can be assigned, while two of the entries must be assigned four letters. (0025, line 1 to 0026, line 6)

As can be seen, the instant invention is concerned with the problem of evenly dividing a number of counting elements with respect to the number of events to be counted and the invention of Dharap is concerned with the problem of evenly dividing a number of entries with respect to the number of available slots, and therefore both are reasonably concerned with the problem of performing division and/or item distribution, as disclosed by Appellant in the instant specification.

Appellant further argues:

> As noted above, the present invention is directed to a performance monitor that calculates the division of plural PMCs among events being monitored by the PMCs. U.S. Patent No. 5,557,548 to Gover et al. ("Gover") teaches a method and system which monitors specified events among the number of events within

> a data processing system. An MMCR allows control over which PMCs are used to monitor which events, and this control enables the ability of certain of the PMCs to be used for overflow of other PMCs. Applicant acknowledges that the present invention utilizes the control concept taught by Gover. However, the present invention improves upon the functionality of Gover by providing structure that enables the MMCR to calculate the optimal division of the PMCs among the events being monitored, when there are fewer events than PMCs. This structure for performing division is explicitly claimed in all of the independent claims, and thus is also claimed in all of the dependent claims...
>
> Dharap merely teaches that the display of data on a small display screen can be modified in a useable way to display less than the total of the data desired to be displayed, when needed. Since neither Dharap nor Gover teach or suggest the claimed elements, it is submitted that the present invention patentably defines over Gover and Dharap, both alone and in combination. Accordingly, each of the independent claims, and all claims depending therefrom, patentably define over Gover and Dharap and are in condition for allowance. (page 9, line 17 to page 11, line 4)

The Examiner maintains that the invention of Gover does teach that when the number of events to be counted is less than the number of counting elements available to count incidences of the events, distributing the number of available counting elements across the number of events to be counted to employ serial counting. Specifically, Gover discloses the particular embodiment using four counting elements (i.e. PMC's) (Figure 4) and discloses that:

> When the maximum number of occurrences of selected events is anticipated to be less than 2^{16}, a user may configure the performance monitor to monitor up to four events within the data processing system. However, if the number of anticipated event occurrences would cause a single PMC to overflow, a user may configure the performance monitor to count up to 2^{64} occurrences without overflow. (column 4, lines 57-64)

As can be seen by the cited section, the invention of Gover discloses that when the number of occurrences of selected events is anticipated to be less than 2^{16}, a method is performed for evenly assigning each of the four counting elements (i.e.

PMC's) to four separate events to be counted. Gover also discloses that when the number of anticipated event occurrences would cause a single PMC to overflow, a method is performed for evenly assigning each of the four counting elements to the same event to be counted.

Therefore, the invention of Gover does teach evenly assigning the counting elements to the events to be counted and while the Examiner maintains that it would have been obvious to one having ordinary skill in the art to perform a conventional division operation in order to distribute the number of available counting events, Gover does not explicitly disclose such a division step.

The invention of Dharap then teaches the claimed steps of division, specifically:

> [D]ividing the total number of table entries by the number of available entries...because only eight slots are available (one slot, entry 1, is used for a command to "show the list"), twenty-six divides by eight three times with a remainder of two, meaning that at most entries (six), three table letters can be assigned, while two of the entries must be assigned four letters. (0025, line 4 to 0026, line 6)

As evident from the applied prior art, the combination of Gover and Dharap does teach the claimed limitations of:

> wherein the number of events equals X, and the number of performance monitor counters equals Y, whereby said at least one monitor mode control register groups said performance monitor counters into Z groups, wherein Y/X=Z; and wherein when X<Y, said at least one monitor mode control register assigns a number of performance monitor counters, said number of performance monitor counters equal to an integer resulting from dividing Y by X, to each of said events to be counted; and wherein said at least one monitor control register assigns any unassigned performance monitor counters to at least one of said events

through the combination of Gover's teaching of evenly dividing and grouping a number of counting elements with respect to the number of events to be counted with Dharap's explicit teaching of conventional division.

Further, motivation to make such a combination exists since Gover does teach evenly assigning the counting elements to the events to be counted and Dharap suggests a method pertinent to the particular problem of distributing items that would have provided means for correctly, accurately, and evenly assigning the counters to events of Gover (Dharap; 0025-0026).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this Examiner's Answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

jrw

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